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IS 12521 (1988): Cross Rim Wrenches [PGD 5: Assembly Hand Tools]

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UDC 621·883

IS : 12521 - 1988

(Reaffirmed 2003)

Indian Standard

SPECIFICATION FOR CROSS RIM WRENCHES

Hand Tools Sectional Committee, EDC 12; Pliers and Spanner Subcommittee, EDC 12 : 7 [Ref : Doc : EDC 12 (4169)]

1. Scope — Covers the dimensions and other requirements of cross rim wrenches.

2. Types

a) Single ended cross rim wrench (*see* Fig. 1),

b) Double ended cross rim wrench (*see* Fig. 2), and

c) Four-way cross rim wrench (*see* Fig. 3).

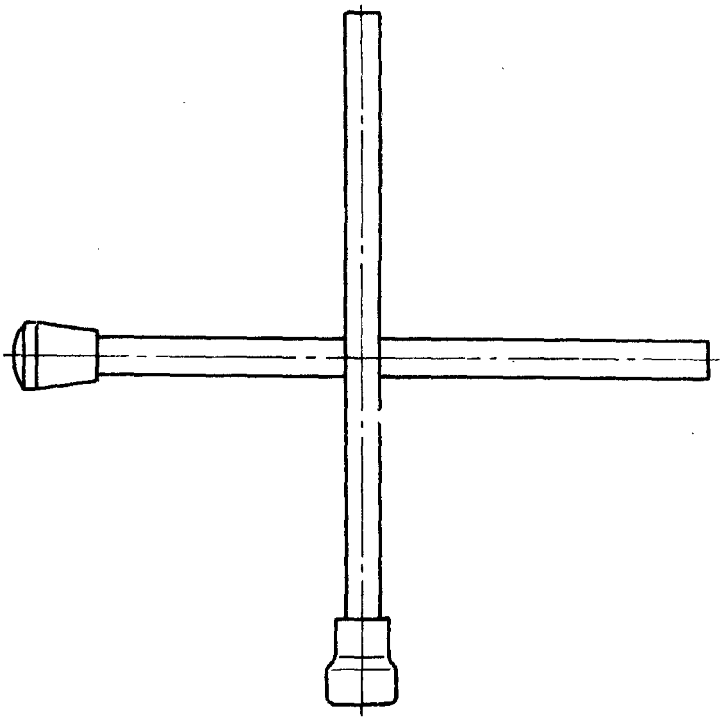

FIG. 1 SINGLE ENDED CROSS RIM WRENCH

3. Dimensions — Shall be as given in Table 1.

3.1 *Tolerances* — Tolerances on the dimensions 'width across flat of socket(s)' shall be as specified for 'unmachined closed' spanners in IS : 2027-1980 'Width across flats for spanners and sockets (*second revision*)'.

3.1.1 The half arms of the wrench shall be of same length with a tolerance of ± 3 percent of length (L) and the angle formed by both arms shall be 90 ± 2°.

4. Material — Suitable alloyed or unalloyed steels meeting the requirements laid down in **5** and **9**.

Example:

Tool steel designation T50Cr4 V2 conforming IS : 3749-1970 'Specification for tool and die steels for cold work (*first revision*)'.

5. Hardness — The whole wrench shall be hardened over the entire length and the hardness measured at any point on the socket heads shall be as specified in IS : 6131-1980 'Technical requirements for hand operated wrenches (spanners) and sockets (*first revision*)'.

6. Manufacture — Rim wrenches shall be solid forged to the shape. Each wrench shall have four sockets either of same size or a combination of different sizes. One end of these wrenches may also be male driving square of sizes mentioned in **3**. The male driving square shall conform to IS : 7214-1974 'Specification for driving squares for hand socket wrenches'. Other combination, such as, single ended sockets, double ended sockets, or having one end as wheel cap opener, may also be selected (*see* Fig. 1, 2 and 3).

Adopted 5 December 1988 | © April 1989, BIS | Gr 2

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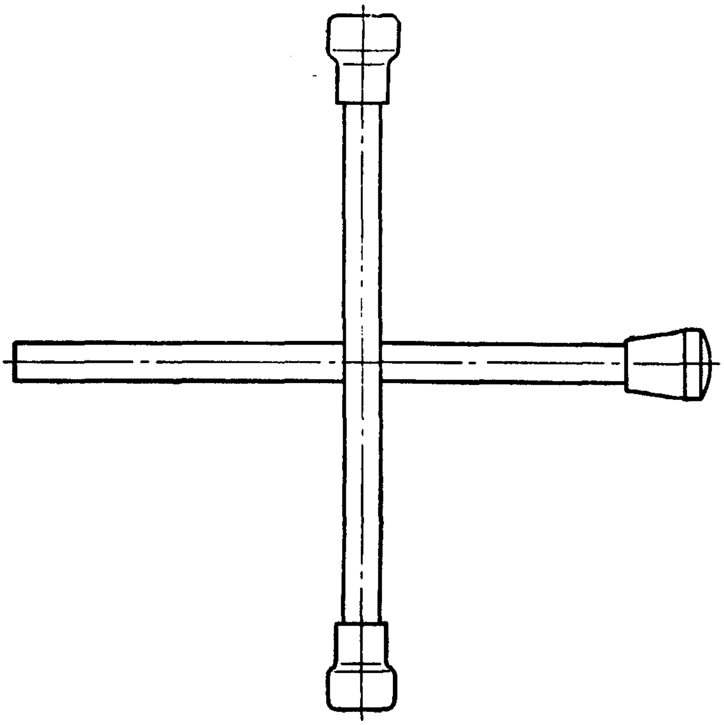


FIG. 2 DOUBLE ENDED CROSS RIM WRENCH

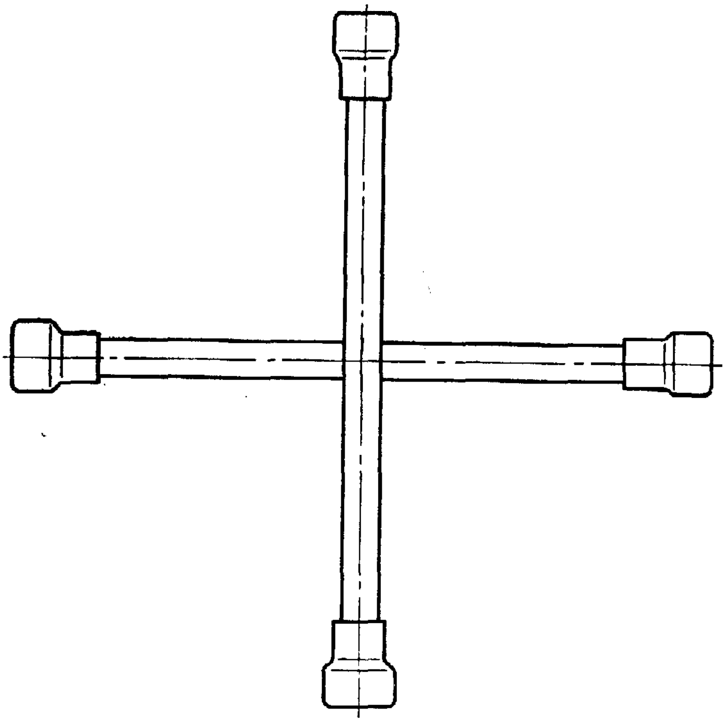
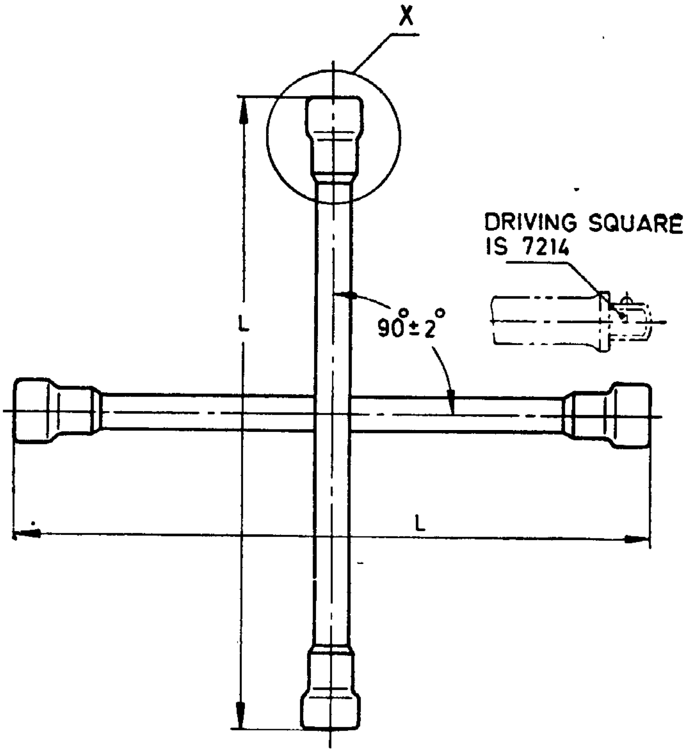


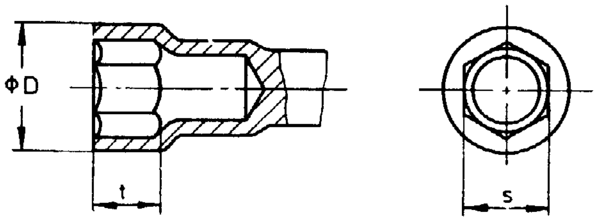
FIG. 3 FOUR-WAY CROSS RIM WRENCH

TABLE 1 DIMENSIONS FOR CROSS RIM WRENCHES

(*Clause* 3)

All dimensions in millimetres.





X (2.5 : 1)

Nominal Size* *s*	**Outside Diameter** *D, Max*	**Length** *L, Min*	*t, Min*	**Driving Squares† Nominal Size**
17	26	360	0·8 *s*	12·5, 20
19	29			
24	33			
27	42·5	450		
32	50	630		
41	63	700		

*Nominal size (*s*) is the width across flats dimensions of the sockets.

†In accordance with IS : 7214-1974.

7. Requirements — Workmanship and finish, preservation and packing and sampling shall be in accordance with IS : 6131-1980.

8. Designation — Rim wrenches shall be designated by commonly used name, the individual socket sizes, and number of this standard.

Example:

a) Four-way cross rim wrench of socket sizes 24, 27, 32 and 41 mm shall be designated as:

Cross rim wrench 24 × 27 × 32 × 41 IS : 12521

b) Four-way cross rim wrench of socket sizes 24, 27, 32 mm and provided with driving square nominal size 20 shall be designated as:

Four-way socket wrench 24 × 27 × 32 sq 20 IS : 12521

9. Torque Test — Place the socket or the square drive over a male hexagonal test mandrel or a female square test mandrel of the corresponding sizes. Apply the corresponding torque ($F \times d$) as specified under Series A and B for sockets and under Series E for square drives in IS : 6131-1980.

It is necessary to use a support to avoid the bending moment that occurs as a consequence of the distance d, between the application point of the load F and the base of the mandrel. A typical test fixture is shown in Fig. 4.

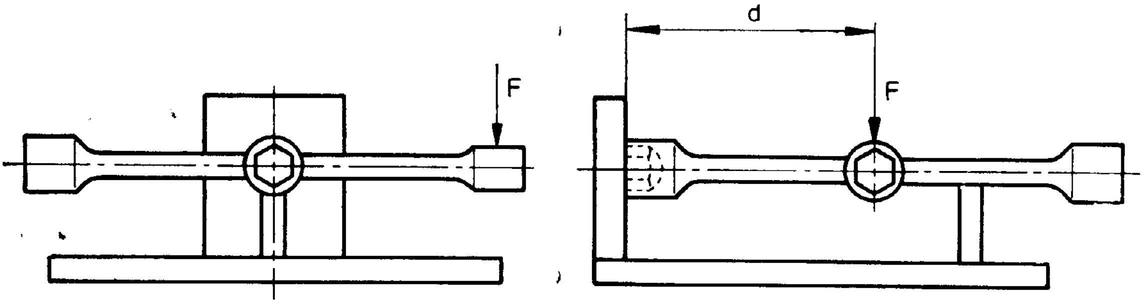


FIG. 4 TORQUE TEST

After the test torque application, the wrench shall present no permanent deformation or any other defect that may influence its correct use.

10. Marking — Cross rim wrenches shall be stamped with the nominal size (that is, widths across flat) near the respective ends of individual sockets, nominal size of driving square (if provided) and the manufacturer's name, initials or trade-mark. Year of manufacture may also be stamped.

10.1 *Standard Marking* — Details available with the Bureau of Indian Standards.

EXPLANATORY NOTE

Cross rim wrenches are also known as four-way socket wrenches which are used for assembling screws and nuts with widths across flats of metric dimensions for trucks and passenger cars for tightening or loosening of the rims.

The recommended wheel nut A/F sizes for a few vehicles in the country are:

17 mm	Tata
19 mm	Ambassador, Fiat, Maruti and Premier
22 mm	Standard, Shaktiman
24 mm	Tata
27 and 32 mm	Tata and Ashok Leyland
41 mm	DCM Toyota and Swaraj Mazda

While preparing this specification, considerable assistance has been taken from the data supplied by the manufacturers of the product and ISO 6788-1982 'Assembly tools for screws and nuts — Four-way socket wrenches' issued by the International Organization for Standardization (ISO).

Printed at Swatantra Bharat Press, Delhi, India